IN THE CLAIMS

Please amend the claims as follows.

1. (previously amended) A method for producing a silicon wafer, comprising:

a silicon crystal production step of producing a silicon crystal while controlling a concentration of boron in the silicon crystal and a growth condition V/G (where V is a growth rate, and G is a temperature gradient in a crystal axis direction) by using, as a boundary condition, a prescribed relationship between the boron concentration in the silicon crystal and the growth condition V/G (where V is the growth rate, and G is the temperature gradient in the crystal axis direction), which is shown by a lower limit line (LN1) of an epitaxial defect-free region ($\alpha 2$), so as to fall within the epitaxial defect-free region ($\alpha 2$) which is a defect-free region in which a silicon wafer substrate is free of defects and an epitaxial growth layer is free of defects and which has the lower limit line (LN1) in which, at the boron concentrations in the silicon crystal of 1×10^{18} atoms/cm^3 and above, the growth rate V gradually decreases as the boron concentration rises, and so as not to fall within an epitaxial defect region ($\beta 2$) in which a dislocation loop cluster occurs in the silicon wafer substrate and defects occur in the epitaxial growth layer and in which the lower limit line (LN1) is an upper limit line;

a silicon wafer substrate obtaining step of obtaining the silicon wafer substrate from the silicon crystal; and

an epitaxial growth step of forming the epitaxial growth layer on the silicon wafer substrate.

2. (previously amended) The silicon wafer production method according to claim 1, characterized in, in the silicon crystal production step, controlling to make the temperature gradient G in the silicon crystal axis direction uniform between a center of the crystal and an edge of the crystal to such an extent that a region between the center of the crystal and the edge of the crystal does fall under the lower limit line (LN1) of the epitaxial defect-free region ($\alpha 2$).

3. (previously amended) The silicon wafer production method according to claim 2,

characterized in, in the silicon crystal production step, applying a magnetic field to a silicon melt from which the silicon crystal is pulled, thereby controlling to make the temperature gradient G in the silicon crystal axis direction uniform between the center of the crystal and the edge of the crystal.

4. (previously amended) The silicon wafer production method according to claim 2, characterized in, in the silicon crystal production step, bringing the silicon melt from which the silicon crystal is pulled to a magnetic field-free state and controlling the number of rotations of the silicon crystal, thereby controlling to make the temperature gradient G in the silicon crystal axis direction uniform between the center of the crystal and the edge of the crystal.

5. (previously amended) The silicon wafer production method according to claim 2, characterized in, in the silicon crystal production step, bringing the silicon melt from which the silicon crystal is pulled to a magnetic field-free state and controlling the number of rotations of a quartz crucible holding the silicon melt, thereby controlling to make the temperature gradient G in the silicon crystal axis direction uniform between the center of the crystal and the edge of the crystal.

6. (currently amended) The silicon wafer production method according to claim 1, characterized in, in the silicon crystal production step, controlling the oxygen concentration in the silicon crystal to no more than 12.5 $\underline{\times 10^{17}}$ atoms/cm^3.

7. (currently amended) The silicon wafer production method according to claim 2, characterized in, in the silicon crystal production step, controlling the oxygen concentration in the silicon crystal to no more than 12.5 $\underline{\times 10^{17}}$ atoms/cm^3.

8. (currently amended) A method for producing a silicon wafer, comprising:

controlling a boron concentration in a silicon crystal and a growth condition V/G

(where V is a growth rate, and G is a temperature gradient in a crystal axis direction) so as to include at least an epitaxial defect region (β1) in which oxidation-induced stacking faults (OSF) occur in a silicon wafer substrate and defects occur in an epitaxial growth layer;

performing heat treatment on the silicon crystal; and

controlling the oxygen concentration in the silicon crystal no more than 12.5 $\underline{\times 10^{17}}$ atoms/cm^3 so that no OSF nuclei develop into OSFs.

9. (currently amended) A method for producing a silicon wafer, comprising:

a silicon crystal production step of producing a silicon crystal while controlling a boron concentration in the silicon crystal and a growth condition V/G (where V is a growth rate, and G is a temperature gradient in a crystal axis direction) so as to fall in ~~the vicinity of a lower limit line (LN3) within~~ an epitaxial defect-free region (α1) in which void defects occur in a silicon wafer substrate and epitaxial defects that are a cause of the void defects, do not appear on an epitaxial growth layer ~~is free of defects;~~ after forming a thin film epitaxial growth layer of less than 2 μm on the silicon wafer substrate where the void defects occur;

a silicon wafer substrate obtaining step of obtaining the silicon wafer substrate from the silicon crystal; and

an epitaxial growth step of forming ~~a~~ the thin-film epitaxial growth layer of no more than 2 μm on the silicon wafer substrate.

10. (currently amended) The silicon wafer production method according to claim 9, characterized in, in the silicon crystal production step, controlling the oxygen concentration in the silicon crystal to no more than 12.5 $\underline{\times 10^{17}}$ atoms/cm^3.